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Picking and Packing Citrus Fruits

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Picking and Packing Citrus Fruits

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INTRODUCTION

Well grown fruit is not necessarily well marketed. The condition of much of our island fruit and the resulting low prices when it reaches the markets indicate the necessity for some general suggestions and cautions in the care and handling of the fruit from picking to consumer.

It is not the expectation in this bulletin to tell all about the subject nor to work out any special system in detail. Methods must be worked out according to the conditions under which each grower labors. It is hoped that this bulletin may give valuable suggestions and principles on which each one may base a successful system adapted to his needs.

The information given is based largely upon the actual experience of the most successful and progressive growers in all the citrus growing regions of the world; hence it is not theory but demonstrated fact. Time and space forbid the enumeration of all the sources, but much has been obtained through personal interviews and observations and also much is due to the reports of the special committee appointed to investigate the causes of the decay in transit of the citrus fruits from California. Reports from the experiment stations of English possessions have contributed their share as well as our own station work and the work of the experiment stations of Florida and California.

While many things are left out for various reasons, it is certain that attention given to the recommendations herein will lead to a better condition in our marketing and help win a place for our fruit in the markets of the world.

Special credit should be given to H. Harold Hume's book on Citrus Fruits. His work has been made the authority on grades and standards for the Island by action of the Horticultural Society, Dec. 2nd 1908.

SUPERVISION.

The first essential to the success of any system is efficient supervision and direction. It is useless to expect the best results when one man must oversee the entire details of all operations and worse than useless to expect the grower to

add these duties to his heavy burdens. The picking, the packing and the marketing should each have their own special supervisor who is held responsible for everything in his field. Under these should be sub-supervisors to attend to the carrying out of the details of each step. Supervisor means, not anyone that can be hired cheap, but a man who has the knowledge and ability to show how each thing should be done and the power to hold his men to the highest standards of excellence in their work without sacrificing too much time. Only by such means can the best results be obtained and each grower should be either training such men or on the watch for them as they come from our agricultural schools.

OPERATIONS

All the steps in picking and packing fall naturally under one of two heads, Field, or Packing House. These will be treated in their logical sequence as far as conditions permit.

FIELD OPERATIONS

Supervision

As a rule seventy or more per cent of the injuries to the fruit are received in some of the various steps in the field operations and nowhere is wide-awake, intelligent supervision more effective than here. Besides the general superintendent who has charge of all the field operations there should be sub-supervisors or gang foremen for every six to ten pickers. These foremen should be chosen for the following characteristics: reliability, skill in their line, ability to instruct and manage men, and quickness to note and correct errors or slackness.

A good picking gang boss is a valuable acquisition and will earn a good salary. Some of his special duties are to see that the pickers' finger nails are trimmed, that all tools are kept in good condition, that the trees as well as the fruit are not damaged nor roughly handled.

The ideal method is to have men who make this their special work and who have trained picking gangs. This will come in time, as other fruit growing sections have demonstrated the value of the system, but as yet each grower here must look to his own men and should train them accordingly.

PICKERS. If possible the same men should always be employed for the same class of work This is particularly true as applied to the pickers. Several to many pickings are necessary in each crop and it requires both skill and experience to recognize the proper degree of maturity for the various shipments and to do the picking properly as well as quickly.

Each picker should be carefully and thoroughly instructed in his work at the very first before he forms any bad habits, then he should be kept under careful supervision until

right methods become habitual. Time thus spent in explanation and drill at the very beginning is worth far more than after one has acquired his habits. Care should be taken to see that the reasons for each step are understood as an intelligent picker knowing the reasons can often make personal modifications that will make him more efficient than if he followed rules blindly.

The fruit should always be grasped by the ball of the fingers, never allowing a chance for the nails to cut or scrape the skin. Examination has shown that a very large per cent of the injuries to fruit received in picking are due to finger nails, hence the nails should be kept short and smooth. Pickers have been noted that injured from 50 to 75% of the fruit they handled, hence the importance of the above suggestions.

Maturity. Several pickings must be made, hence the importance of recognizing a proper degree of maturity for each picking. This degree will vary depending on the conditions necessary between the picking and placing the fruit in the hands of the consumer.

All citrus fruits are better flavored and of higher quality generally if allowed to ripen on the tree, hence, where the fruit will remain in good condition for long periods after maturity, as the pomelos and some varieties of oranges, no fruit should be gathered until fully ripe.

Untold injury is done to the fruit industry by the shipping of immature fruit. This is especially true if the country is new and a reputation for the fruit has to be made, for a reputation for poor fruit is very easy to be established and exceedingly hard to overcome.

If the fruit will not hold well after ripening, then extra care is necessary in picking to see that it is not picked greener than conditions demand.

Lemons are in a class by themselves as they are always gathered according to size almost regardless of their degree of maturity. In picking them the orchard should be gone over at least once a month, better oftener. Each picker is supplied with a ring either 2⅛ or 2¼ inches in diameter and all fruit that is beginning to ripen, all that will just pass through the ring, all that is too large to pass through, and all that is defective or diseased should be gathered. The larger sized ring is to be used if the fruit is to be kept for two months or more as the longer the fruit is cured and kept, the more it will shrink.

Ladders. Thus far the need of ladders in our groves is confined almost entirely to the wild fruit trees, but each year will see the need of them more and more and it is well to be prepared. Never should fruit for the market be shaken down as some of it is at present nor should pickers be allowed to climb about in the trees, as more damage is done to the tree than would pay for many ladders.

In order to be most serviceable a ladder should be light, easily adjusted, steady, and of such form as to place easily in the tree without damage to limbs. One of the forms most nearly fullfilling all these conditions is made from bamboo. It consists of three bamboo poles hinged at the ends either by a ring or some similar arrangements. This will give a tripod which is the firmest and most easily adjusted of all forms. The steps can be made from bamboo or strips as desired. Steadiness is increased by widening the spread at the bottom.

Clippers. Fruit for shipment should always be clipped. Any other method is to be severely condemned, even clipping will damage if the work is not done properly and good clippers used.

There are several clippers now on the market that follow the recommedations of the committee that investigated the troubles with the fruit from California. The essential points are that the clippers should cut smooth, clean, and close and be of such construction that even the green pickers cannot nip or puncture the fruit.

Two clippings are usually best. First a cut to free the fruit, then another to clip the stem as close as possible so that it will not injure other fruits.

All fruit should be laid into the picking basket never dropped even for a distance of a few inches. Any fruit dropping for a foot or more especially if onto a hard or rough surface should be kept apart and never put into a fancy pack. Always remember that the fresh cells of the skin are very delicate and one broken means danger to the whole fruit.

Picking baskets. Many forms of picking baskets are on the market, but most of them are faulty in one or more particulars. The following are the essentials: lightness, for they must always be carried; rigidity, as the sack forms allow of the squeezing of the fruit, a good fitting form so that it can be handled easily and comfortably; it should have a simple hinged bottom so that fruit can be emptied into collecting boxes without pouring from one to the other.

One of the baskets nearest fulfilling all these conditions is a light zinc one called "Perfection Fruit Pickers Basket" and should hold enough to fill one side of the collecting crate, as a second emptying of fruit in the same side admits one more chance for injury.

Collecting Crates. Many use the ordinary shipping crates for this purpose and they serve very well if one or two cautions are observed. First, never fill them more than ⅔ or ¾ full or so that another box set on top can touch the fruit; second, fix the boxes so they will nest together and thus hold rigid when being hauled to the packing house. This can easily be done by nailing a strip across each end on the outside allowing it to project about an inch above the top. Third, fix on handles so that the boxes can be lifted easily, quickly and securely.

As with the fruit no box should be allowed to drop any distance. Fourth, see that there are no projecting nails or slivers that can injure the fruit. It is also an excellent plan to fix drop bottoms to the crates so the fruit need not be dumped out as is usually done. The writer has never seen such a crate on the market, but it can be easily and cheaply arranged by a little ingenuity.

Wagons. All wagons for hauling fruit should be broad tired, low built, arranged to turn very short, and have good springs. There are many regular orchard and fruit wagons on the market and it is a good investment to have one.

Only a careful man should have charge of the hauling as there is so much chance for rough handling especially in the loading and unloading. One box let fall may easily damage enough fruit to pay the difference in wages betwen a poor man and a good one.

Summary. In all the work remember the old proverb "Haste makes waste," and ever strive to impress on your men that it is quality first, then quantity, not the reverse as is usually the case.

Careful comparative experiments have shown that with proper training and supervision the difference in the cost of gathering a box of fruit as it should be gathered and the cost as it was gathered under the best of the old methods amounts to less than a cent while the gain amounts to from 5 to 50 per cent more fruit saved. Certainly this is a gain worth striving after with intelligence and presistency.

PACKING HOUSE OPERATIONS

General. While it is probable that the most of the injuries to fruit are received in some of the field operations yet the packing house is responsible for a goodly per cent, and such injuries are the worse in that they are usually so minute that they escape detection until the fruit is on the market.

Another great loss in packing houses is that of time, due to faulty arrangement and inadequate fittings. To remedy these often necessitates a complete readjustment and new equipment.

When planning a packing house every plan possible should be consulted, houses in operation should be visited and their workings studied, special earnest study should be given the various kinds of apparatus needed. In a word obtain all the information and all the experience, particularly the latter, possible, digest it and make it a vital part of your own plans. I have seen hundreds of dollars worth of machinery rotting in dump heaps often because it had been bought without due consideration and investigation. A few dollars or in case of a large packing house, even a few hundred dollars spent in investigation will be a paying investment.

Inspection. The inspector of a packing house must be gifted with much executive ability, have keen perception, lasting energy, and a good knowledge of both the growing and the packing of fruit. It is he that must check up errors or faults in all the methods even of growing, and be able to show the way to reforms. Then he must see that all the processes of the packing house are carried out properly, accurately and expeditiously, without friction or loss of time. To him must each worker look for instruction and direction. Only with such a man at the head can a packing house reach its highest efficiency.

The larger the establishment, the more expert aids the inspector should have to help hold up the standard of work. This expert inspection will cost and cost much, but, if there is one thing that every progressive fruit growing section of any age has proved, it is this fact that the right kind of inspection pays a handsome profit to the grower as well as packer.

Location. The location of the packing house needs careful consideration for it is not easy to move. As far as possible look ahead and see what the future demands are going to be. Usually it is best to have the house where a siding can be run to it when the crop is large enough to demand it. If such a location is impossible it is then best to build it in the grove as fruit can be transported with less danger of injury after being packed.

Water supply, drainage, and ventilation, are the next three things to be considered. It may happen that the water supply will of itself determine the location as there must be an abundance of fresh pure water; hence the expense of obtaining this supply may easily outweigh all other considerations. As to the last two, the house should be where it is as dry as possible and where the air can circulate freely for dampness and absence of ventilation make ideal conditions for the development of the fungus diseases so disastrous to the packed fruit. The top of a small hill or ridge where a good well with a windmill can be had makes an excellent situation.

Arrangement and principles. Space forbids the description in detail of the arrangement and processes of different packing houses. Each packing house must meet certain conditions peculiar to it alone and hence must be planned and modified accordingly. There are, though, certain things, certain principles that should govern all arrangements as far as possible and it is these that will be discussed leaving the particular modifications to the individual builder.

The first principle and one that should govern all houses is that each machine, each operation should be in logical order so that the movement of the fruit from the time it enters till it leaves will be continuous. Every duplication, every interference of one operation with another, every unnecessary

moving or handling, every extra step for workers, every awkward method or arrangement, each and all mean loss of time, extra expense and increased danger of injury to fruit. The steps to be arranged for are, in their natural order, curing, washing, grading, sizing, packing, and nailing and marking of the boxes. Side operations to be arranged for are storage of materials, box making and storage of made boxes.

The second principle is that expansion should be allowed for in each operation. Rebuilding is apt to be very expensive.

The third general principle is "Keep every machine in its best working order" and fourth, "have places to dump all waste and diseased fruits so that the house can be kept clean of all rubbish and disease."

Form of house. This will depend much on the system of equipment, but usually a long rather narrow house with arrangements for taking the fresh fruit in at one end and removing the packed fruit from the other will give the most economical adjustment of all parts.

Storage and box making. Storage and box making are best arranged for on a separate floor, either a basement or overhead, preferably the latter unless the basement is very dry and airy. If at all damp and close, the boxes and material are liable to mould and nothing is more injurious to the looks of a pack than mouldy boxes. Then too, if there is another floor, the boxes can be made up at odd times that might otherwise be lost. The movement of the materials and boxes from one floor to another can be easily arranged for by a block and tackle elevator and chutes.

Curing Space. The fruit is usually cured in the collecting crates so it is well to have the floor of the curing space on a level with the wagon bed so the fruit can be slid from wagon out onto the floor. This part should be particularly airy and with as cool even temperature and dryness as can be obtained. It should be large enough to accommodate easily without piling more than three or four crates high, all the fruit from one picking.

Washing and drying. This is one of the hardest things to arrange for so that it can be done economically. For best results there must be a constant flow of pure clean water through the washer. This necessitates a storage tank or a spring. Often these processes are arranged for outside of the packing house proper as not all fruit needs to be washed, in fact the aim of every grower should be to raise fruit that will not need it. Where there is much dry weather and sunshine during the shipping season this outside arrangement is very good and it may often be advisable to even build a simple shed for this purpose. When possible have the exit from the washer a little above the top of the drying table. Then connect the two with a screen bottomed trough so the fruit can roll out on the drying table. In all arrangements make it a point to

let gravity do as much of the transfering of fruit as is possible as it is cheaper and less likely to injure the fruit than machinery or handling.

The drier when built outside is a large slanting table built on side most exposed to sun and made of ½ or ¾ in. slats set on edge with spaces of ¼ to ½ in. between. The table is slanted so that all the fruit will roll slowly to one corner and this corner is next to the house and at the level of the grading table or belt so that the fruit rolls directly to the grader. When mechanical driers are used they should have the same relation, that is the fruit on leaving the drier should pass directly to the grader.

Grading tables. These should be directly in front of the sizers and if the house is at all complete, or for a large grove, it is best to have the belt form. They should be arranged so that the fruit can be transferred as graded directly to sizers without loss of time.

Sizers. The arrangement of these in a large house is one of the most difficult problems in the equipment. The chief points to be considered are: that each grade has its own sizer; that the distributing system from sizer to bins is as direct, short and simple as it can possibly be made, the belt system is probably the best; do not use an overhead system unless it is better than those now installed; see that there are no free drops of more than 4 to 6 inches, nor sharp angles where the fruit will stop; do not have slant of distribution troughs, if that is the system used, so great that fruit runs swiftly enough to be bruised by striking together or against some corner; see that there are no slivers nor projecting nail points; and, lastly, see that sizers are simple and of such a construction that the fruit cannot possibly be bruised nor squeezed, that they size accurately and are easily adjustable to the different fruits. Speed in sizing is of much less value than accuracy and easiness on the fruit as it passes through. The thinnest, most delicate skinned fruit should be as safe from injury as the toughest.

A good way to arrange the bins is to make them deeper at front than at back and then stretch a piece of sack across the back near the bottom for the fruits to fall upon as they come from the sizer. The size of the bin depends upon circumstances. Where belt distributers are used from the sizer and many bins may be had for each size, then each bin should hold about one box. They should never be so large nor of such a form that every fruit cannot be easily grasped by the packer. The front of the bins should be so arranged that the boxes of packed fruit will be easily accessible to the nailer and nailing up table. Usually along aisles with a broad cross aisle at the end of the rows is the best form. Along this broad aisle the different nailing tables can be placed and from

them the fruit taken directly on to the finishing and shipping space at the other end of the building.

PROCESSES. Having given a brief sketch of the chief points to be considered in arrangement let us now take up the various processes in the actual packing.

Curing. The purpose of curing is to toughen the skin so it will stand handling and shipping better and also to cool it before packing. As a rule the less time used for curing the better as every additional day between being picked and put on market means a largely increased risk of loss. This is especially true of Tangerines and most of the oranges. Pomelos last much better and should be cured till the skin is soft and pliable. Lemons are picked green and are cured by special methods so cannot be treated here. Under good conditions two to four days is probably all the time that should be taken with our fruit, and, in many cases such as soft or poor carrying fruit, it may not be advisable to cure more than one day. Each packer should experiment with his fruit until he knows definitely just what is the best. A properly cured fruit has lost its brittle fresh feeling, the skin has become thin and pliable, and close inspection shows the surface oil cells to be semidried so that they do not easily rupture when pressed.

Washing and Brushing. Each grower should strive to grow fruit that will not need washing, but there will never be a time probably but what some washing or brushing will need to be done. Some wash before curing, but it is best to cure first for several reasons chief of which is that the fruit is not so easily injured and much of the injured fruit can be detected and cast out before washing, thus lessening work and risk of contamination to the rest.

Great care should be exercised in this process to see that the fruit is not being injured by the brushes or some other part of the washer. A faulty brush, a gritty sponge, some badly fitting part may cause more loss than the gain due to washing. Washing injuries are the hardest to detect as they are all minute.

See that there is a constant rapid change of water as the washing of one diseased fruit will render the water dangerous to all others that have the slightest abrasion of the skin.

Speed has much to do with the efficiency of the washing so watch carefully till you have found the right speed then hold to that. Usually a very slow motion is best and lessens risk of injury.

If the tube or sponge washer is employed and it is one of the best when rightly used, see that there are plenty of sponges and also that there is a stop to check the too rapid movement of the fruit.

Do not crowd any washer if you wish good work.

As in all the processes it is quality of work first and all the time.

Drying. The fruit is transferred from washer to drying table either by hand, by buckets, bucket belts, or gravity. In case of the first two watch carefully as here is a source of danger. The fruit is wet and more easily injured than when dry.

If the drier is exposed and constructed so as to allow free circulation of air it will take but a few hours to dry the fruit, but it should be thoroughly dry as moist fruit is very susceptible to fungus disease.

Do not let the fruit get heated by the sun as cooling and heating are very injurious to keeping qualities.

Grading. Of necessity all grading must be done by hand. Only the very best and most trustworthy men should be trained for this work; for it is here that much of the growers reputation is made or marred. Faulty grading also means great financial loss as even one or two poor fruits may seriously depreciate an otherwise excellent pack. Every grade should be as uniform as human skill can make it. It is in grading and packing that our great fruit associations are doing their best work for they are training specialists for each process and the tremendous increase in profits prove that these specialists pay.

If we are to successfully compete with their packs we must profit by their experience and meet them on their own ground.

As we are new comers in the markets it is best that we adopt the grades already established and trust to our brands to make our name. According to the Florida standards which the Horticultural Society has adopted for the Island, there are two general classes of oranges the Brights and the Russets. Each of these has 3 grades. These grades are in general Fancy, Choice, and Standard; or Fancy, No. 1, No. 2. Sometimes there is an Extra Fancy, but this should never be used unless the fruit will justify it as it means perfection in color, form, skin, and quality, not perfection in one or two or three of these but in all. Nothing will destroy the reputation of a grower's brand quicker than to call a pack Extra Fancy when it is not.

In the Fancy grade the skin should be perfectly clean, thin, smooth, well colored, of satiny texture and free from blemish. The fruit should be well formed for its variety, uniform in size and shape, heavy, juicy, and of fine quality. As will be seen this is almost perfection so the Extra Fancy should not be used unless each of the points above is extra in perfection.

The Choice or No. 1 grade differs from the Fancy in that the fruit need not be so uniform or of as high degree of excellence in color, weight, skin, and juiceness. Even a few small blemishes may be passed.

The Standard or No. 2, grade is the one used for the

over-sized or undersized fruits. There may be considerable variation in color, skin etc. In a word this is the grade for the fruit that is marketable yet not Fancy nor Choice.

If fruits are very dry, badly deformed or blemished or at all injured they should be thrown in the culls. The best of these may be disposed of locally, or made up into vinegar or some other by-product. Fruit juices, ciders, vinegar, and denatured alcohol all offer good fields for investigation as means of using these culls and each large grower should follow the developments in these lines closely, adopting any methods that are successful.

The "Russets" or in other words the fruit that has been attacked by the rust mite should be graded as far as possible by the above standards using the amount of russeting as one of the chief factors in the grading.

In grading for quality especially if one's grove is composed of wild trees, it is advisable to take sheet zinc or copper and make labels and then test and label every tree. This will mean some expense and extra work in picking and handling but it will pay big interest on its extra cost when it comes to building up one's reputation and brand.

Sizing. As the grader separates the fruit into its grade it passes directly to the sizers. There should be a sizer for each grade. Some may grade after sizing, but this causes all the "Culls" to be sized which is not advisable for several evident reasons.

One of the chief secrets of accurate sizing is the proper regulation of the speed. As a rule the slower the speed of both fruit and sizer the more accurate the work. After trial has shown the best speed then that speed should be carefully maintained. Irregular speed means poor work.

Watch the movement of the fruit in the sizer and see that it is not crowding at any place, is not being injured in any way by the sizer or introduced causes, and that the sizers are running uniform and true. Always be sure that every size is the maximum of that size. It pays to give full measure in every way.

Packing. This process has two distinct phases, wrapping the fruit and placing it in the box.

Wrapping. The quality of neatness enters largely into this, as the placing of the fruit so that the brand is well displayed, that the paper is not unnecessarily wrinkled and that the twist is well made, all call for considerable taste as well as skill.

Each packer has a table or stand with his wrapping paper upon it. It is a good plan to have a hemisphere like the half of a croquet ball or something similar fastened on the table for the paper to lie upon. This gives the curve to the paper so that when placed about a fruit the edges fall together readily. Otherwise the paper will often kink and not fall

properly to make a quick easy twist. It must be remembered that to pack each box of fruit means several hundred distinct movements; hence, every unnecessary one, every awkward one, or any obstruction to freedom will mean a very appreciable loss in the course of a day as well as having a tendency to lower quality of work. Place the paper rack so the paper can be easily taken with one hand as the other hand grasps the fruit, then the orange is placed in the paper, the ends are gathered together and with one twist the fruit is wrapped. See that the brand is well displayed on each fruit.

Paper and brands. The choosing of the paper and brands is a very important step. The following are points for consideration. It never pays to use cheap paper for fine grades. It is advisable to have at least two sizes and perhaps two grades of paper. One size for the larger fruits and one for the smaller, then one grade for the fine fruit and one for the cheap. Have at least two brands, one for fancy and one for standard. It is best though to have a brand for each grade. These brands should be simple, neat, attractive and distinctive in design, of pleasing colors, and of such size that it will display well on the wrapped fruit. Pay special attention to the design as it is the appearance of the brand that brings many a customer. If colors are used see that they will not smear when moistened.

To test quality of paper, wet your finger then lay the paper on it and note the time necessary for the moisture to pass through. First grade paper should be glazed, thin, soft and very pliable, tough when either dry or wet, and should absorb moisture very slowly.

Placing of fruits. To pack neatly, rapidly and properly requires natural aptitude and much experience. Only those of good eyes, dexterous fingers, and good judgment all combined with scrupulous honesty should be trained to do the packing. This is evident when it is considered that the packer is the last one to handle the fruit. He must correct all errors of grading, sizing and detect even incipient trouble besides keeping the packs up to the standard in all the mechanical details such as tightness, neatness, etc. Any carelessness here is evidenced when fruit is put up for inspection and may often lose a good sale entirely. Every customer is influenced both consciously and unconciously by the first sight of the pack and good prices necessitate good appearance at first sight as well as upon closer inspection.

The diagrams for the placing of the fruits are given on a separate sheet for use in the packing house. Each packer should have one near him for constant reference until each pack has become perfectly familiar. These diagrams are made from both California and Florida standards. As a rule they agree, but in a few cases they do not. Each state has several packs that the other has not.

Boxes. All boxes are now bought ready made, with either panneled or solid ends. They come knocked down so all the packer has to do is to put them together. In doing this he should see that enough nails are used to hold firmly, that the centers are properly placed, that the bands or straps are properly made and placed and that the boxes are of the right size. It is not generally known, but there are two distinct sizes of standard boxes, one the California and the other the original Floridian. The size of the California is 11½ x 11½ x 23 inches inside fruit space, as opposed to an inside space of 12x12x24 inches for Florida. A ½ in. each way is not much but it means a difference of about 400 cubic inches, the equivalent of 26 oranges of the 150 size. It will be seen that when one uses the Florida box one of three things results; he must use a larger fruit than the California packer uses for any given size, or he must put in more fruits, or he must have a loose pack. As oranges are sold entirely by the size and box it is evident that the Floridian loses as compared with the Californian, but his loss is the purchasers gain. This also enforces the fact that boxes should be measured every now and then to see that the size is being maintained.

Some planters complain of having trouble with certain packs, chiefly the 72's and 54's. Part of this is due to the fact that these packs require the fruits to be placed one upon the other. As a rule the placing of one fruit directly upon another is to be avoided, but with proper cutting of stem, wrapping etc. it can be done without serious danger. These poor packing sizes can often be avoided by distributing the larger fruits in that size to the next higher and the smaller ones to the next lower size. Some of the trouble is also due in some cases to the difference in the size of the boxes as described above.

The Horticultural Society resolved to discard the 72 pack and to use the 4x5 or 5x4 for packs of graprfruit up to 64's.

There are some patent straps now on the market, one of which, made of paper, is very attractive add will and to the appearance of a Fancy pack.

The end being packed is always best next to the bin. The paper rack with paper sets on the outer half. This arrangement saves many moves in the course of the day as a good packer should pack from 75 to 100 boxes daily. In placing the outside layers see that every brand is as fully displayed as possible. Do not have one fruit turned to show only one half of the brand, the next another part, etc. An attractive brand, well and regularly displayed will draw many probable customers and if backed up by quality of fruit will mean quick success and the best prices.

When properly packed the fruit projects above the box a quarter to half an inch.

Nailing. For this work there are almost as many plans and kinds of apparatus as there are packing houses, but the principle is the same in all In essence the apparatus consists of a table on which the box is placed, then two arms so spaced and arranged that they will bear down on the lid with sufficient pressure to hold it firm while it is being nailed and strapped. These arms should strike the box close to the outside so as not to injure the fruit. The pressure should be applied gradually. Often a third arm is advisable to hold down the center, but when used it should not be on the same plane as the two ends but about ½ inch higher to allow for bulge in center of box.

In nailing be sure the nails do not penetrate into the box. Much damage has been done by careless work in this regard.

Marking. The condition of the box and its markings are what the color is to the flower. They are the attractive magnets that draw inspection so that time and expense in making them extra attractive are time and money well spent, always presuming that they are backed up by the fruit itself.

The brand on the box as on the paper should show as few defects in workmanship and printing as possible. If the boxes are printed at home, use only the best of stencil inks and brushes and see that the ink is of right consistency to print clear and clean.

Besides the brand each box must bear the shipping directions, grade of pack, size and ofttimes such other information as name of owner, packer, shipper and association marks. It is best to have as much as possible of all these put into one stencil and thus assure perfect uniformity in alignment, size, etc. of each part. If the solid ends are used the stencil can be made the same size as the end, space being left in it for size. This will necessitate a stencil for each grade and for each consignee, but these stencils can be bought for a small cost and in case of the Extra Fancy or Fancy packs this extra cost will be more than made up by gain in appearance of pack. Many use printed paper brands, but these are easily torn and are not satisfactory for finer grades of fruit.

Have all markings in correct relation to the corners of the end. Remember that carelesness or slovenliness in any detail here, indicates to the purchaser that the contents are similar, hence attract few buyers and bring low prices.

Trucks. For transferring the boxes of fruit where some form of belt carriage cannot be used, baggage hand trucks are best employed. These should have clamps arranged to grasp the boxes firmly by their ends, never their sides. These clamps hold the boxes from slipping off and bruising the fruit

SUMMARY

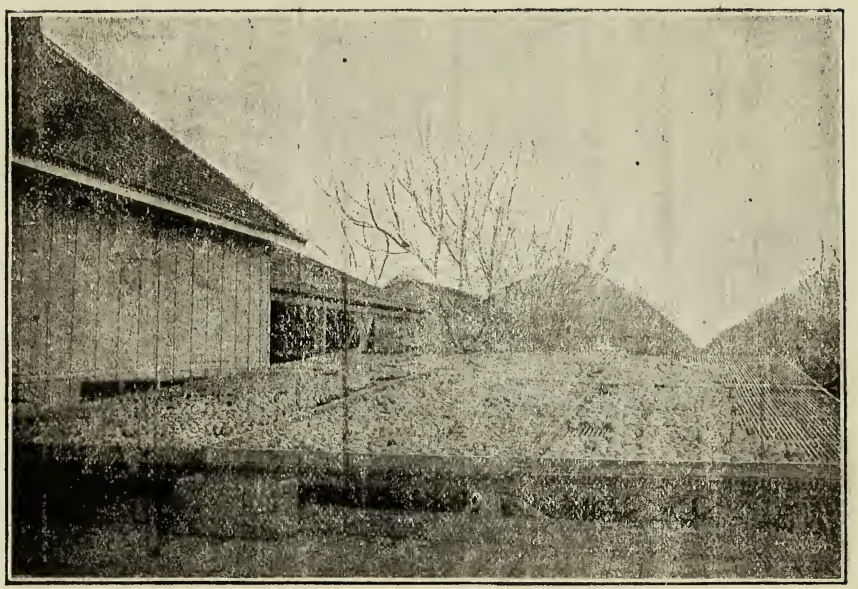
1. Presuming that you have first class fruit, see that it is well matured and properly and carefully picked. A well

matured uninjured fruit will keep for weeks where otherwise it would keep days only.

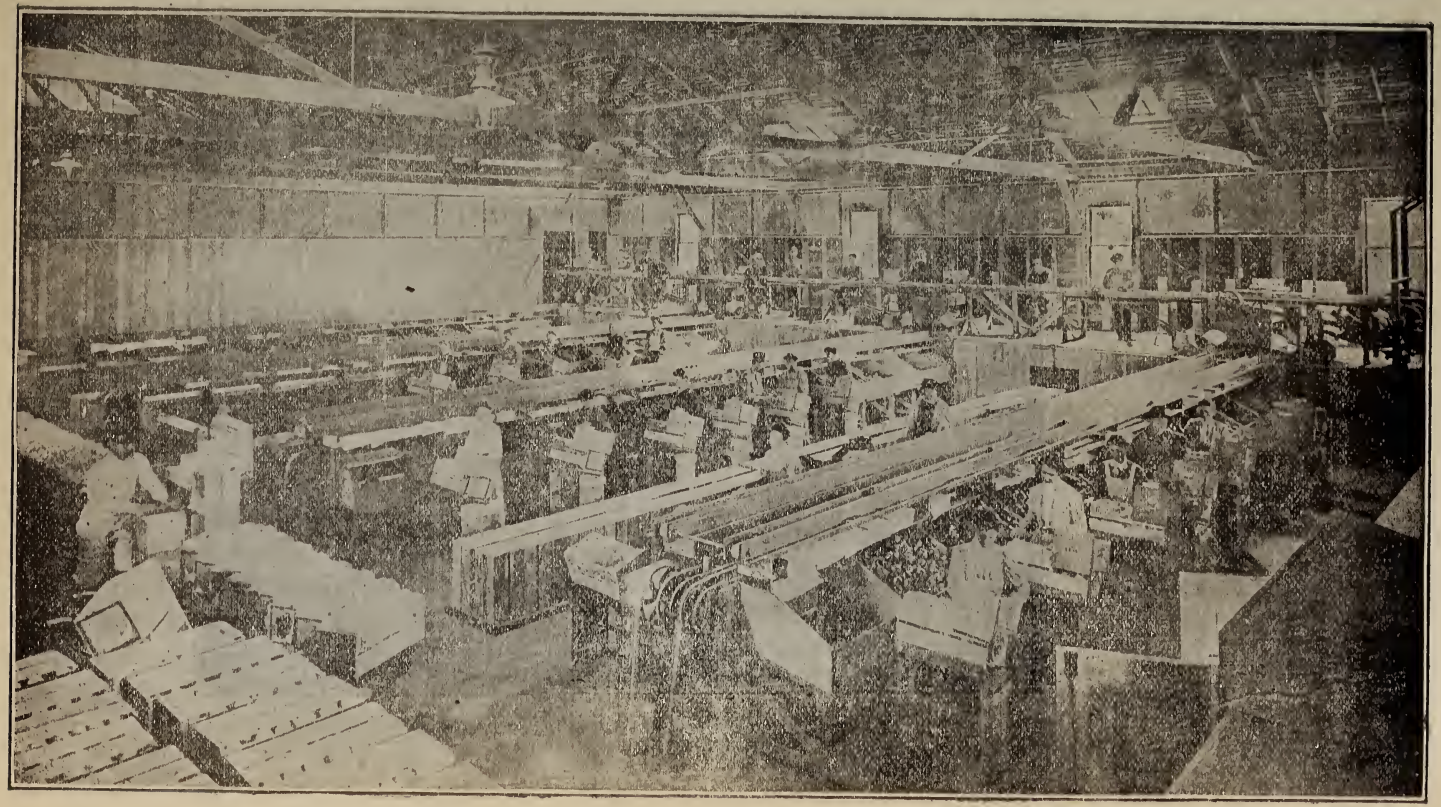
2. As soon as fruit warrants it, adopt brands that stand for high grade and scrupulously maintain the standard of these.

3. Unless cost is absolutely prohibitive, make any change or addition that will reduce risk of injury to fruit or will add to perfectness and attractiveness of pack.

4. Remember that the more buyers attracted to examine your fruits, if the fruit is found worthy, means higher prices, quicker and more certain sales. From this standpoint the following are the most important things to bring good prices and in this order. A catchy attractive box to stop the passerby, next an excellent pack to win examination, fine looking fruit to cause purchase, last, quality to hold the customer. Such a scheme thoroughly carried out is sure to bring success and bring it quickly.



WASHED ORANGES ON DRYING RACKS.
From Bul. 123 B. P. I.



AN INTERIOR VIEW OF A DESIRABLE TYPE OF ORANGE PACKING HOUSE.
From Bul. 123 B. P. I.